

Claims Amendments**Dated: 08/31/2009**

Please replace the previous claims section with the new claims section provided below.

CLAIMS

While the invention has been described with reference to particular example embodiments, further modifications and improvements which will occur to those skilled in the art, may be made within the purview of the appended claims, without departing from the scope of the invention in its broader aspect.

Numerous modification and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

What is claimed is:

Claims 1-22 canceled.

Claims 23-30 canceled.

31. (new) A method of noise filtering edge detection (NFED) for recovering received signal edges, including over-sampling and digital filtering of a received signal wave-form based on comparing an edge mask, representing an expected pattern of received wave-form samples corresponding to an edge of an original wave-form, with a sequence of captured wave-form samples surrounding a consecutive analyzed sample of the received wave-form; the NFED method comprising the steps of:

capturing multiple samples of the received signal wave-form per a symbol time; performing logical or arithmetic operations on particular samples of the edge mask and their counterparts from the sequence of surrounding samples; using results of such operations for calculating an edge proximity figure estimating a proximity of the analyzed sample to said received signal edge; using such edge proximity figures for detecting phases of said received signal edges.

32. (new) A method of noise filtering edge detection (NFED) for recovering received signal edges, including over-sampling and digital filtering of a received signal wave-form based on comparing an edge mask, representing an expected pattern of received wave-form samples corresponding to an edge of an original wave-form, with a sequence of captured wave-form samples surrounding a consecutive analyzed sample of the received wave-form; the NFED method comprising the steps of:

capturing multiple samples of the received wave-form per a symbol time;

performing logical or arithmetic operations on particular samples of the edge mask and their counterparts from the sequence of surrounding samples;

using results of such operations for calculating a correlation integral estimating a proximity of the analyzed sample to said received signal edge;

using such correlation integrals for detecting phases of said received signal edges.

33. (new) A method of noise filtering edge detection (NFED) for recovering received signal edges, including over-sampling and digital filtering of a received signal wave-form based on comparing an edge mask, representing an expected pattern of received wave-form samples corresponding to an edge of an original wave-form, with a sequence of captured wave-form samples surrounding a consecutive analyzed sample of the received wave-form; the NFED method comprising the steps of:

capturing multiple samples of the received wave-form per a symbol time;

performing logical or arithmetic operations on particular samples of the edge mask and their counterparts from the sequence surrounding said analyzed sample;

using results of such operations for calculating a correlation integral estimating a proximity of the analyzed sample to said received signal edge;

analyzing said correlation integrals calculated for the sequences surrounding consecutive analyzed samples, in order to find locations of maximums or minimums of such integrals;

using such locations of maximums or minimums for detecting phases of said received signal edges.

34. (new) A method of noise filtering edge detection (NFED) for recovering received signal edges, including over-sampling and digital filtering of a received signal wave-form based on comparing an edge mask, representing an expected sequence of samples corresponding to said received signal edge, with a captured sequence of received signal samples surrounding a consecutive analyzed sample of the received wave-form; the NFED method comprising the steps of:

capturing multiple samples of the received wave-form per a symbol time;
performing logical or arithmetic operations on particular samples of the edge mask and their counterparts from the sequence surrounding analyzed sample;
using results of such operations for calculating a correlation integral estimating a proximity figure of the analyzed sample to said received signal edge;
selecting those of the correlation integrals which exceed an edge threshold, as they indicate received signal changes greater than noise levels;
analyzing such selected correlation integrals, calculated for the sequences surrounding consecutive analyzed samples, in order to find locations of maximums or minimums of the selected integrals;
using such locations of maximums or minimums for detecting phases of said received signal edges.

35. (new) A method of adaptive noise filtering edge detection (ANFED) for recovering received signal edges, including capturing multiple samples of a received wave-form per a symbol time and digital filtering of the received signal wave-form based on comparing an edge mask, representing an expected sequence of samples corresponding to said received signal edge, with a captured sequence of received signal samples surrounding a consecutive analyzed sample of the received wave-form, wherein a programmable control unit (PCU) controls operations of synchronous sequential stages (SSP); the ANFED method comprising the steps of:

using said PCU for
a programmable registration and analysis of the captured received signal,
modifying said edge masks based on results of such signal analysis;

using said SSP for
performing logical or arithmetic operations on particular samples of the edge mask and their
counterparts from the sequence of surrounding samples,
using results of such operations for calculating a correlation integral estimating a proximity of
the analyzed sample to said received signal edge,
using such correlation integrals for detecting phases of said received signal edges.

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